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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,988	01/18/2006	Yukuo Katayama	126599	7174

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EXAMINER	
PO, MING CHEUNG	
ART UNIT	PAPER NUMBER
1797	

NOTIFICATION DATE	DELIVERY MODE
08/24/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com
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Office Action Summary	Application No.	Applicant(s)	
	10/564,988	KATAYAMA, YUKUO	
	Examiner	Art Unit	
	MING CHEUNG PO	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 July 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/23/2010 has been entered.

Office Action Summary

2. This is the response to request for continued examination field on 07/23/2010.

3. Claims 1-16 are pending and have been fully considered.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 – 7, 10 - 12, and 16 are rejected under 35 U.S.C. 103(a) as being obvious over KAMEI (U.S. 4,702,745) as evidenced by EMIKOLOPOV et al. (4,607,796)

KAMEI teaches a process for dewatering water-containing coal, in lines 15 – 31 of column 3 that comprises heating a high moisture porous structure of the solid in a fluid medium having an elevated temperature and a high pressure, thereby reducing the moisture of the solid, starting to compress the porous structure of the solid by

mechanical means, while maintaining the temperature and the pressure of the surrounding fluid medium the same as in the final stage of the step (1) and (3) lowering the pressure of the surrounding fluid medium while maintaining the mechanical compression of the solid. KAMEI teaches in lines 48-68 of column 2 that method KAMEI teaches is to soften and shrink the porous nature of the solid. KAMEI teaches that the moisture is pushed out of the void capillaries and then the void capillaries are collapsed.

KAMEI teaches in lines 38 – 41 of column 3 that the temperature of the heating medium is more than 180°C and preferably between 230 to 350°C **(temperature of 100°C to 350°C)**.

KAMEI also teaches in lines 29 – 36 of column 8 that dewatering in the heating step is carried out so as to remove the moisture in a liquid state by suppressing evaporation of the moisture by keeping the pressure of the surrounding fluid medium not less than saturation pressure **(under a pressure not less than a saturated steam pressure)**.

KAMEI teaches in lines 5 – 7 of column 10, that a load of 100 kg/cm^2 is exerted. 100kg/cm^2 which translates to 9.807 MPa **(0.01 MPa to 20 MPa)** using a piston.

KAMEI does not seem to explicitly state that a shearing force is applied.

However, KAMEI teaches in lines 7 -12 of column 6 that a screw, extruder type compressing-depressurizing unit is used to exert the mechanical force. A screw, extruder type inherently provides a compression force as well as a shearing force, based on its design **(shearing force)**.

ENIKOLOPOV et al. (4,607,796) teaches a method of extruding wherein the source material is subjected to compression force of 0.2 to 0.7 MPa, a pressure of 0.2 to 50 MP and a shear force ranging from 0.03 to 5 N/mm^2. 1 MPa =1 N/mm^2. ENIKOLOPOV explicitly teaches in lines 1-59 of column 2 that a single screw extruder is able to generate that amount of shearing force

It would be obvious to one of ordinary skill in the art to use a screw, extruder type compressing-depressurizing unit may be used as to generate a shear force of 9.807 MPA since KAMEI teaches in lines 44-46 of column 4 that FIG 3 is an embodiment of compressing-depressurizing units.

In lines 13 – 21 of column 6, KAMEI teaches that the remaining moisture in the dewatered coal in the compressing-depressurizing unit is evaporated. In lines 54 – 68 of column 4 and lines 1 – 15 of column 5, KAMEI explains that the mechanical force is applied to the coal, thereby starting to compress the solid structure of the brown coal while maintaining the elevated temperature and the high pressure of the surrounding fluid medium. In lines 49 – 56, KAMEI further states that in the initial stage of compression, liquid water is expelled from the coal by the mechanical compression **(dewatering during application of shearing force)**.

Regarding claim 2, the screw extruder type is housed in a compressing chamber in lines 7 – 11 of column 6. Fluid pressure sealings are taught in lines 21 - 24 of column 6 as made by material seal through the tapered moulds **(sealed vessel)**.

Regarding claim 3, the temperature was taught to be preferably 230 to 350°C **(150°C to 300°C)**.

Regarding claim 4 and 5, the pressure was taught to be 9.807 MPa **(not more than the saturated steam pressure of the temperature for the heating +0.5 MPa)**.

Regarding claim 6, KAMEI teaches in lines 4 – 5 of column 10 that 5 minutes after the inside temperature of the autoclave reached 258°C, the mechanical force was applied and the depressurizing valve was opened to discharge the steam **(period of from three minutes to five hours)**.

Regarding claim 7, an example is given in table 1 from in column 9 that details the value of the Australian brown coal used has a moisture value of 65.5%. **(25% to 85% of water)**

Regarding claim 10 – 12, KAMEI gives an example in Table 2 that details that the present invention leaves the coal with 3.9% wt moisture **(coal containing not more than 15 weight% of water)** According to lines 23 – 27 of page 10 of the represent application, water that is preferably removed substantially completely is 0 to 15 weight% **(substantially does not contain water)**.

Regarding claim 16, KAMEI does not teach the extent to which the capillary voids are collapsed. KAMEI does explicitly teach in lines 48-68 of column 2 that method KAMEI teaches is to soften and shrink the porous nature of the solid. KAMEI teaches that the moisture is pushed out of the void capillaries and then the void capillaries are collapsed.

Examiner is of the position that based on the similarities of the claimed process and the process that KAMEI teaches, that the process that KAMEI teaches will generate coal with more than 68% pore volume decrease.

6. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over KAMEI (U.S. 4,702,745) in view of VERSCHUUR (U.S. 4,216,082).

The above discussion of KAMEI is incorporated herein by reference.

KAMEI teaches a process for dewatering brown coal that comprises removing the water that is present in brown coal in a sealed vessel.

KAMEI does not appear to disclose adjusting the water content in the final mixture to 30 weight% to 50 weight%.

However, VERSCHUUR teaches that aqueous coal slurries are obtained for instance in brown coal mines and in the process of dewatering of brown coal in lines 6 – 11 of column 1. VERSCHUUR also teaches that it is possible to have a slurry fraction with a water content of 45 weight percent which is the minimum water content for handling slurries with normal pumps.

It would be obvious to one of ordinary skill in the art at the time the invention was made to add water to coal that KAMEI teaches to a water content of 30 weight% to 50 weight%.

The motivation to do so can be found in lines 12 – 19 of column 1 of VERSCHUUR which teaches that slurries with a high water content % are stable enough to be transported in pipelines.

Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

7. Claims 13 - 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over KAMEI (U.S. 4,702,745) and GREGORY (U.S. 2,824,790).

The above discussion of KAMEI is incorporated herein by reference.

KAMEI teaches a process for dewatering brown coal that comprises removing the water that is present in brown coal in a sealed vessel.

KAMEI does not appear to disclose a method for preparing bitumen -containing coal comprising addition 1 weight% to 25 weight% of bitumen, calculated on the basis of dry coal to the dewatered coal.

However, GREGORY teaches a coal briquetting process where the coal is heated to its fusing temperature after admixture with a fluxing agent to create briquettes. The fluxing agent includes coal tar **(coal tar)** and bitumen and is preferably less than 8% but preferably 5% by weight on dry basis **(1 weight % to 25 weight % of bitumen and 5 weight% to 20 weight%)**.

At the time of the invention, it would have been obvious to have admixed the coal with the coal tar that GREGORY teaches.

The motivation to do so can be found in lines 15 – 19 of column 2 of GREGORY. GREGORY teaches that a fluxing agent causes coal to fuse at a temperature below that which it would normally fuse and enlarges the fusing range of temperatures.

Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill at the time the invention was made.

Response to Arguments

8. Applicant's arguments filed 07/23/2010 have been fully considered but they are not persuasive. Applicant argues that KAMEI does not teach a shearing force. As stated before, it is the office's position that a screw extruder by function would impart

both a compression force and a shearing force. One of ordinary skill in the art would expect that a screw extruder would function by rotating. As a screw extruder rotates, it imparts a force that is parallel to the coal that is also being compressed at the time, deforming it. Applicant further argues that a single screw extruder such as the one that KAMEI teaches is incapable of generating the necessary shearing force to change the pore structure of the coal. Applicant argues that it is necessary for there to be a twin shaft type kneader as shown in Figure 2 of the specification. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a twin shaft screw type kneader) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicant argues that the process that KAMEI teaches is not capable of "collapsing any significant number of pores". However, KAMEI explicitly teaches in lines 48-68 of column 2 that method KAMEI teaches is to soften and shrink the porous nature of the solid. KAMEI teaches that the moisture is pushed out of the void capillaries and then the void capillaries are collapsed. Applicant argues that a twin shaft screw type extruder has pitch that decreases towards the downstream side. This is not reflected in the claims. It has been further suggested that applicant give evidence that the single screw extruder that KAMEI teaches, would functionally not be able to provide the shearing force that is being claimed to achieve similar results. ENIKOLOPOV et al. (4,607,796) teaches a method of extruding wherein the source material is subjected to compression force of

0.2 to 0.7 MPa, a pressure of 0.2 to 50 MP and a shear force ranging from 0.03 to 5 N/mm^2. 1 MPa =1 N/mm^2. ENIKOLOPOV explicitly teaches in lines 1-59 of column 2 that a single screw extruder is able to generate that amount of shearing force. ENIKOLOPOV also teaches in lines 32-34 of column 3 that the reference invention requires no special equipment and can be realized with the help of a single-screw extruder. Applicant further states that decrease in pore volume due to the application of sear force is nowhere disclosed in KAMEI. KAMEI explicitly teaches a decrease in pore volume, as stated above iapplication68 of column 2. Further KAMEI teaches in lines 54 – 68 of column 4 and lines 1 – 15 of column 5, KAMEI explains that the mechanical force is applied to the coal, thereby starting to compress the solid structure of the brown coal while maintaining the elevated temperature and the high pressure of the surrounding fluid medium. In lines 49 – 56, KAMEI further states that in the initial stage of compression, liquid water is expelled from the coal by the mechanical compression (dewatering during application of shearing force). Examiner is of the position that based on the similarities of the claimed process and the process that KAMEI teaches, that the process that KAMEI teaches will generate coal with more than 68% pore volume decrease. Applicant is recommended to present evidence showing that it is not possible for the process that KAMEI teaches to generate coal with more than 68% pore volume decrease.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MING CHEUNG PO whose telephone number is (571)270-5552. The examiner can normally be reached on 9:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571)272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ming Cheung Po/
Patent Examiner

/Ellen M McAvoy/
Primary Examiner, Art Unit 1797